

REMARKS

Applicant hereby amends Claims 7 and 20. In view of the following discussion, all of pending Claims 7-18, 20, 22-28 and 29-33 are in condition for allowance.

I. Examiner Interview

Applicant notes with appreciation the Examiner Interview of May 28, 2008 and the detailed discussion of Applicant's position as to the prior art and claims. Specifically, Applicant's undersigned representative pointed out that the claims define that the weapon is maintained in the active state "exclusively dependent" upon the strength of the signal.

The claims were discussed relative to both the Reiner '642 patent and the corresponding published application identified as the Reiner '976 application, which contains different disclosure than the '642 patent. Funfgelder was also discussed.

II. Section 112 Objections

With respect to the Section 112 rejections in the latest Office Action, reconsideration is requested:

Office Action - Paragraph 1

This drawing objection was previously addressed in Applicant's May 14, 2007 response by submission of a substitute drawing sheet for Figure 1. The amendments and the comments below as to Figure 1 were made in this prior response but were not acknowledged in the June 20, 2007 Office Action. Consideration is now requested.

Repeating as to the Paragraph 1 rejection, the manner in which the weapon is placed in the activated/deactivation state is asserted in the Office Action as being objectionable and requiring amendment of the drawings. Accordingly, Figure 1 and specification Paragraph 29 were amended in the May 14, 2007 response to diagrammatically represent an electromechanical locking mechanism 26. This amendment does

not add new matter since an electromechanical locking mechanism of this type is known for weapons. For example, the Reiner references simply refer to locking devices 14 which are diagrammatically illustrated in the same manner as Applicant's substitute Figure 1.

Approval of Figure 1 is requested.

Office Action - Paragraph 3

It is not understood why this enablement objection was only first raised in the June 20 Office Action after a number of several prior Office Actions. Further, the June 20 Office Action was made final, and Applicants were not provided any opportunity to address this rejection.

Despite the foregoing, placing the weapon in an active state or deactivated is clearly enabled by the specification, and the knowledge of the skilled artisan. In this regard, specification Paragraph 29 teaches the weapon has a microprocessor which is configured to activate the weapon where the weapon is placed in the activated state by unlocking of an electromechanical locking mechanism or similar safety mechanism.

Paragraph 13 further discloses that electromechanical locking is carried out through an electromagnetic mechanism or through activation of the electronics during electronic ignition in weapons of this type. Thus, specific examples of activation mechanisms are provided and further specifics are not required to enable the skilled artisan, who would have knowledge of these mechanisms and their use in weapons.

In further support, Applicants note the discussion below of MPEP §2164.08 which is applicable here.

Office Action - Paragraph 4

As to Paragraph 4, Applicant reiterates the prior arguments as to this issue. Claims 26 and 31 are objected to based upon the recitation in these claims that the name or picture of the authorized user is to be displayed on an

indicator of the identification unit. Applicants respectfully disagree.

These claims recite the step of displaying the name or the picture of the authorized user on the identification mechanism. Pursuant to MPEP §2164.08, this section, as argued previously, sets forth that "not everything necessary to practice the invention need be disclosed" and in fact it is best to omit some information. "All that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art." The skilled artisan would readily understand how to practice the claimed invention based upon the specific disclosures of the specification.

More particularly, the disclosures of Paragraphs 26 and 28 define that there are three interconnected structural components comprising the identification mechanism 2 which "includes a sensor for detecting an identification code, namely a fingerprint reader 5", a microprocessor 9 which is included on a printed circuit 8, and an LCD indicator 12 which is "controlled by" the microprocessor 9. These components are specifically recited in Paragraph 26.

Further, Paragraph 28 defines that the microprocessor 9 has a store. This store has the fingerprint pattern of the authorized person, or other identification, stored therein. This clearly defines that the identification mechanism 2 senses a characteristic of the authorized user wherein the microprocessor serves as a comparator which compares the input fingerprint with the stored fingerprint and effects matching therebetween. Hence, the microprocessor 9 is able to identify the authorized person through the comparison and matching of the input and stored fingerprint. Clearly, an identification of an authorized user is accomplished.

Next, it is possible to use this authorization routine to effect display of the name or picture of the authorized user of the weapon on the display 12. In particular, Paragraph 26 states that the LCD indicator and the other electronic

components of the identification mechanism are controlled by the microprocessor 9. In this regard, the identification mechanism 2 further includes the function key 13 as part of the identification mechanism wherein the function key is configured to indicate the name or picture of the authorized user of the weapon on the display 12. Thus, the identification mechanism 2, including the function key 13 thereof, is operatively connected to the microprocessor 9, which microprocessor 9 in turn is connected to the display 12. It is believed that the skilled artisan would readily appreciate that the name or picture would be in the store of the microprocessor 9 and the function key 13 would be configured and cooperate with the microprocessor 9 so that the name or picture is displayed through the microprocessor 9 on the display 12. This is believed to be clearly within the realm of skill of the artisan, and it is unclear how this disclosure would not enable a skilled artisan to connect a function key with a microprocessor and a display to effect the display of a picture or name of the authorized user that has been identified by the microprocessor 9 during the comparison process.

Further, the standard is not that the specification would teach every exact detail, but only that the specification teach the skilled artisan how to make and use the scope of the claimed invention without "undue experimentation". MPEP §2164.08. Hence, the standard of enablement being applied against Claims 26 and 31 is not believed to be in conformance with established standards of enablement, and the objection to such claims is believed improper. Withdrawal of the objection to Claims 26 and 31 is respectfully requested.

Office Action - Paragraph 5

Claim 30 is rejected as failing to comply with the written description requirement. Applicants respectfully disagree with the statement in the Office Action that "there is no such disclosure in either the original specification or

drawings." Applicants cite Paragraphs 4, 5, 7, 8 and 9 in support.

Paragraph 4 of the specification refers to prior art which requires a coded signal that is continuously communicated in coded form wherein receipt of the continuously coded signal is required. This system can be overcome or paralyzed as disclosed in Paragraph 5 by a strong interfering transmitter which interferes with the continuously coded signal and overpowers same so as to disable the weapon from firing.

Paragraph 7 further discloses that the present invention, after the initial unlock code is received, exclusively depends on the signal strength which must be continuously received at a level that is at least as great as the signal strength which occurs at the maximum usable distance between the user and weapon. Thus, when the signal strength is at or above this minimum signal strength, the weapon is maintained in the active state.

As disclosed in Paragraph 8, "maintaining the readiness of the weapon to fire is therefore exclusively dependent upon signals received by the receiver having a field strength which corresponds "to the minimum field strength defined at the maximum distance between the transmitter and receiver". The weapon remains activated when the field strength is equal to or greater than the field strength at the minimum level.

Paragraph 9 further defines that "the readiness of the weapon to fire cannot be disturbed by an interfering transmitter" since only the strength or the field strength of the received signals is important. Paragraph 9 further discloses that the weapons can "no longer be rendered functionless with a strong interfering transmitter". Thus, the skilled artisan will readily appreciate that an interfering transmitter cannot overpower the signal, wherein an increase in signal strength would not render the weapon of the invention useless since the signal strength would at all times be above the minimum required signal strength.

Thus, the subject matter of Claim 30 is clearly within the scope of the invention as possessed by the inventors and as disclosed in the application. Claim 30 is believed to be fully supported by the disclosure. Claim 30, however, was also amended to provide alternate language which may be more acceptable to the Examiner wherein the additional insert specifically conforms to the disclosure of Paragraph 9.

Based on the foregoing, Applicants respectfully contest the objection to Claim 30, and reserve the right to appeal such objection.

## II. Prior Art Rejections

As to the prior art, Claims 7-11, 13, 14, 17, 18, 20, 22, 29 and 32 are rejected as being anticipated by the Reiner '642 patent. To respond to this rejection, Applicant makes the following points, and in doing so, reiterates many comments from its prior response.

A. As argued in the May 14, 2007 response, the Reiner '642 patent must be interpreted in combination with its published application, namely Published US Patent Application No. 2002/0032976 A1 (herein the Reiner '976 application).

Both the Reiner '642 patent and the Reiner '976 application are of record.

The Reiner system does not disclose applicant's claimed invention since Reiner does in fact require continuous transmission of identification codes 30 which are continuously checked upon each transmission to confirm the presence of an authorized user. This is a first condition of having the weapon activated and this first condition must continue to exist for the weapon to remain activated.

Simultaneously, with this continual verification of an authorized user, distance monitoring between the weapon and identification device also occurs which is a second condition necessary for the weapon remaining in the activated state.

To fully appreciate the requirement that two separate conditions, namely 1) authorization code and 2) distance, must

continue to be satisfied even after initial activation of the weapon, the '976 application needs to be considered along with the similar, but different text of the '642 patent.

The '976 application is believed closest to the original PCT disclosure and contains important differences as to the Reiner '642 patent. Most notably, patented Claim 5 actually conforms to published Claim 10 of the '976 Application. This claim 10 includes the same claim language and application Paragraph 13 contains the same discussion of this claim language as that discussed below relative to patent Claim 5.

Additionally, the Reiner '976 application also includes application Claims 12 and 41 which are discussed in application Paragraph 41. All of these claims clearly disclose that the identification codes 30, 36 are continuously transmitted which is important since it indicates the first condition of valid identification codes 30 is required simultaneously with the second condition of valid distance measurement.

B. Applicants claimed invention does not require the simultaneous existence of two valid conditions namely, proper authorization and proper distance measurement. Rather, Claims 7, 20 and 29 explicitly preclude requiring the simultaneous receipt of a valid authorization code and a proper distance measurement.

Applicant's invention generally relates to the method of controlling the activation/deactivation of a weapon while avoiding interfering transmissions which would overpower a signal from an identification unit of a user. This objective is accomplished by using the identification mechanism or unit to initially identify an authorized user, and then send an activation code to the weapon which activation code is received and causes activation of the weapon to permit firing.

After the weapon is made active, however, the requirement for activation is no longer needed. Rather, the receiver on the weapon exclusively monitors the signal strength of a continuous signal transmitted by the identification mechanism

wherein the weapon processor maintains the weapon active "exclusively dependent" upon the signal strength from the continuous signal sent by the identification mechanism and without regard to the activation code or activation signal.

As such, the weapon of the claimed invention first receives the activation code from the identification mechanism to make the weapon active, and thereafter, the processor on the weapon exclusively monitors the strength of the signals being received without regard to the content of the signals, i.e. frequency, coding, etc. and maintains the weapon active so long as the signal is at a level above a minimum signal strength.

Hence, if a powerful interfering transmitter enters the weapon zone, the interfering signal generated thereby would only add to the total signal strength which would continue to stay above the minimum signal strength and the interfering transmitter would not interfere with continuing activation of the weapon.

The specific claim language is discussed as follows:

Independent Claim 7: defines that an activation code is sent and then the continuous signal is transmitted. Receipt of the activation code causes the weapon to initially be placed in the active state, and then the strength of the continuous signal received by the weapon receiver is monitored. The claimed method maintains the weapon in this active state "exclusively dependent [emphasis added] upon the monitored strength of the continuous signal being at or above a minimum signal strength". The remainder of Claim 7 further clarifies the meaning of "exclusively dependent" by precluding such things as the frequency of the continuous signal or the presence or absence of the activation code.

Thus, signal strength is the sole determinant of the maintaining step. This is not true in Reiner as discussed below which requires simultaneous existence of the first and second conditions.

Independent Claim 20: This claim defines transmitting a coded activation signal with the activation code followed by transmitting an uncoded signal. Upon receipt of the coded activation signal, the weapon is placed in the active state. However, the signal strength of the uncoded signal is monitored and the weapon is maintained in the active state "exclusively dependent" [emphasis added] upon the uncoded received at the weapon being at or above the minimum strength, regardless of the signal frequency or the presence of an interference signal. Thus, since the weapon is maintained active exclusively dependent upon the signal strength, this precludes the requirement of having a proper coded signal monitored simultaneous with the signal strength.

In accord with the discussion below, Reiner does not disclose a method of maintaining the weapon active exclusively dependent upon the strength of an uncoded signal received by the weapon.

Independent Claim 29: Here again, this claim defines an activation code and a continuous signal after the activation code, wherein the weapon is placed in the activated state if the activation code is received, but the weapon is maintained in the activated state exclusively dependent upon the signal strength of the continuous signal being at or above a minimum strength and regardless of signal frequency or the presence of a code therein. This thereby allows for avoiding of deactivation by an interfering signal.

C. Claims 7, 20 and 29 all use the phrase "exclusively dependent" when referring to the signal strength. This phrase distinguishes over Reiner when fully considered.

The term "exclusively dependent" is used in the specification in Paragraph 8 which describes the invention. Further, this terminology does not read on Reiner since it precludes simultaneous monitoring of both (1) a proper activation code and (2) an adequate signal strength which is required in Reiner to maintain the weapon active.

If necessary for appeal, Applicants attach hereto dictionary definitions for "exclusive", i.e. not shared with any others, and "dependent", forced to rely on something else. Thus, Claims 7, 20 and 29 maintain the weapon in the firing state in dependence on only one exclusive factor, namely the strength of the signal.

This prevents overpowering transmitters from drowning out an activation code and causing unwanted deactivation of the weapon which is the very problem of Reiner, and the very problem avoided by Applicant's claimed invention.

D. The Reiner system (as disclosed in the '642 patent and '976 application) completely differs from Applicant's claimed arrangement since Reiner requires continuous receipt of both (1) the acceptable identification code, and (2) adequate distance.

As discussed below, the two conditions must be present simultaneously and continuously in Reiner.

First Condition/Continuous Receipt of Acceptable Identification Code:

The first condition required in Reiner is continuous receipt of a proper identification code 30, 36. In this regard, Claim 5 of the Reiner '642 patent expressly discloses that the transmission and/or receiving unit (19, 219) of the user (17, 217) is "designed for the continual or continually consecutive, intermittent signal transmission". This thereby does teach that the codes 30 are sent continuously or essentially continuously. In support, Col. 5, lines 32-35 of the Reiner '642 patent discusses Claim 5 and further states that this provides advantages yet "performs an authorized user check without any loss of security, if the checking intervals are kept correspondingly short."

Additional support is provided from the published US application corresponding to the Reiner '642 patent, namely

Published US Patent Application No. 2002/0032976 A1 (herein the Reiner '976 application). It is noted that Claims 12 and 41 disclose that "the transmission and/or receiving unit (20) in the region of the firearm (2, 4) is designed for the continual and/or continually consecutive, intermittent emission of identification codes (30, 36) [emphasis added]". Notably the language of application claims 10, 12 and 41 substantially track each other, and hence are believed to expressly disclose that the identification codes 30 are transmitted continuously or at least substantially continuously through a "continuously, consecutive intermittent signal".

The skilled artisan would have knowledge of both the Reiner '642 patent and the corresponding published '976 application so as to use both documents to interpret the scope of disclosure of the Reiner art.

Hence, the coded signals 30 are in fact sent continuously even after the weapon is activated.

First Condition/This First Condition also Requires Continuous Recognition of the Identification Codes:

Since the coded signals 30 are continuously sent, they are tested each time for proper recognition or authentication. If not authentic or proper, the test would fail and the gun would not operate.

As to such signals 30, all of Col. 10 and through Col. 11, lines 1-3 of the '642 patent describe how these identification code signals are transmitted, possibly encrypted and decrypted, and then compared (after being decrypted) to determine if the identification code 30 matches a code 36 in the memory unit. The following citations to this disclosure are from the '642 patent for reference purposes.

As noted previously, the Reiner disclosure does disclose multiple repeated transmissions. In this regard, Col. 10, lines 34-37 disclose that the "encoding code" and "decoding code" vary from "one transmission to the next". It is believed clear that the encoding and decoding codes are in

fact encryption and decryption algorithms and the reference to a signal being "encoded or even uncoded" in Col. 10, lines 57-62 is really a description of the unique activation code 30 being encrypted or not.

Col. 10 further discloses that when the code 30 is received, it is compared for a match with stored codes 36. This comparison is done each time a code is received, and since transmission of the code 30 is sent by a continual or continually consecutive, intermittent signal transmission, the code 30 would be checked substantially continually and would need to continually match the code 36 for the release element 15 to be active and remain active.

Section E, below, discusses how these identification codes 30 are always coded, and the reference to encoding and decoding merely refer to encryption or decryption of a signal that always has a unique identification code, whether encrypted/encoded or decrypted/decoded.

Second Condition/Adequate Distance:

While columns 10 and 11 of Reiner discuss distance, this does not eliminate the fact that the code 30 continues to be transmitted even when distance is monitored.

In further support, Col. 11, lines 18-23 of the '642 patent disclose that distance protection can be provided by limiting the transmission range, which also indicates that continuous transmissions would be required for this option to work. Since this passage is talking about the transmissions relating to the identification code 30, this necessarily indicates that the identification code 30 continues to be monitored and authenticated, i.e. the first condition, simultaneously while the signal strength might be used to monitor distance, i.e. the second condition.

Additionally, it appears there may be secondary distance measuring devices 37 but this does not negate the continued transmission and monitoring of the code 30 which is expressly disclosed in the Reiner '976 application as being continuous (as disclosed in Claims 10, 12 and 13). Hence, Reiner

clearly discloses repeated transmission of the code 30, such that the distance measurement is a secondary condition that is simultaneous tested while the code 30 is still being transmitted and itself tested as the first condition.

The First and Second Conditions Must Coexist Such That The Reiner Weapon is Not Maintained Active Exclusively Dependent Upon Distance:

Clearly then, the code 30 transmission must coexist with the distance test which distinctly differs from applicant's claimed invention. Hence, Reiner does not maintain the weapon in a firing state exclusively dependent upon the distance test, since it also requires simultaneous performance of the identification code test.

In further support of the continuous transmission of the code 30, patent Claim 7 and application Claim 13 recite that the range of transmission of the identification codes is greater than the distance or the distance range. Application paragraph 16 discusses application Claim 13 and states that "an authorized user can be identified without however deactivating the locking device e.g. for removal of the firearm and/or for firing a shot, and only when the authorized user is located with the distance range e.g. to the firearm can the locking device be deactivated". This clearly indicates that the identification code and distance measuring are two different processes that occur and may occur at different distance parameters. In particular, the code comparison and authentication would be occurring even when beyond the distance range.

At no point is Reiner believed to disclose that the continuous tracking of the identification code 30 would be terminated or disregarded, and the system would rely solely upon the distance measuring to maintain the firearm active.

As such, the Reiner documents do not anticipate Applicant's claimed invention.

E. Office Action Paragraph 9 Incorrectly States that A Signal is Transmitted That Includes An Activation Code or May Be Uncoded

The identification code 30 referenced in Column 10, lines 1-4 is always coded to indicate that an authorized user has the weapon. The encoding/decoding of Col. 10, lines 57-62 merely refers to whether the identification code 30 is an encrypted coded signal or an decrypted coded signal, and in no case is the identification code 30 made uncoded since this would eliminate the unique signature which makes 30 an identification code.

This discussion is also amplified by Section D above which discusses the encryption/decryption in more detail.

Therefore, the code of the identification code 30 and the encryption/decryption are two distinctly different things like apples and oranges. Paragraph 14 of the Office Action, also intermingles apples and oranges in the incorrect statement that Col. 10, lines 56-62 "provides for both coded and uncoded signals", which really means encrypted/decrypted but does not teach that identification 30 does not always have a unique signature.

F. Office Action Paragraph 23 includes statements that do not take into account the differences in so-called ranging signals, and the different, continuous identification codes.

As discussed above, the point of Applicant's argument is that the transmission of ranging signals and identification codes are two different things, which must occur simultaneously and must be satisfied after weapon activation for the Reiner weapon to remain in a firing state.

It is in an incomplete statement that "once the gun is authorized, the only way to deactivate the weapon is to take it out of range of the user". This is not correct since the weapon can also be deactivated by disrupting or overpowering the transmission and authentication of the identification codes 30.

G. Funfgelder Also Simultaneously Requires A Positive Code Comparison and Maintaining Adequate Difference to Maintain the Weapon Active

As to Funfgelder, this reference fails to cure the deficiencies of Reiner discussed above. In particular, this reference is now cited under Section 102 as an anticipatory reference for the pending claims even though such was not the case through multiple Office Actions.

In this regard, Claim 1 of Funfgelder requires that "the object is activated or remains activated [emphasis added] for each positive code comparison and [emphasis added] if a predetermined distance is maintained". The disclosure also discloses that "locking of the weapon is cancelled only so long as the signal", namely the coded signal is received. Hence, this system also requires two simultaneous conditions, namely 1) continuous receipt of a coded signal and 2) proper distance. Funfgelder therefore can be overpowered by an interfering transmitter which overpowers the coded signal and prevents successful receipt of this signal. While the distance test may be adequate, the overpowering disruption of the coded signal could then cause unwanted lockout of the weapon.

Funfgelder therefore differs from Applicant's claimed invention which does not require a continuous coded signal and instead, maintains the weapon active exclusively dependent upon the signal strength. As such, Funfgelder does not anticipate Applicant's claimed invention.

H. Office Action Paragraph 24 Alleges Applicant's Analysis is "Backwards"

Applicants analysis is believed valid in that: Funfgelder requires simultaneous detection of 1) a coded signal, and 2) an adequate distance; Funfgelder does not disclose maintaining a weapon active "exclusively dependent" upon signal strength without regard to other factors such as the presence of an

activation code; and Claims 7, 20 and 29 recite such step of maintaining the weapon active "exclusively dependent" on the signal strength, such that the prior art (including Funfgelder and Reiner) fail to disclose all features of applicant's claimed invention.

The Office Action includes the statement as to Funfgelder that "the coded signal is the activation signal while the distance-measuring signal is not coded" which statement fails to address the maintaining step of the Applicant's claims and the "exclusively dependent" feature thereof, which feature is not present in this prior art. Specifically, Funfgelder requires that the distance-measuring signal and identification code continually coexist, and the object remains activated only for each positive code comparison simultaneously with maintenance of a predetermined distance.

I. The Remaining Obviousness Rejections Fail Due to the Deficiencies of Reiner and Funfgelder.

As to the obviousness rejections of Claims 12, 24, 15, 25, 33 and 23, all of these references require Reiner as disclosing the basic invention of the independent claims. In that Reiner is defective and does not disclose the features of the independent claims, Reiner is not believed effective as the primary reference for the obviousness rejections, and withdrawal of such rejections is respectfully requested.

Based on the foregoing, all of the claims are believed in condition for allowance. It is believed that prosecution will be advanced by conducting a further Examiner Interview, and the undersigned requests same once the Examiner has had an opportunity to review this Response.

Respectfully submitted,

  
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penditure || the amount by which something is greater than what is usual or permitted etc., a 10% excess of rejects || (pl.) acts which are more violent than accepted standards of conduct allow, the troops committed many excesses || (pl.) inordinate indulgence in sensual pleasure || (chem.) an amount of one substance greater than is necessary to complete reaction with another in excess of over, luggage in excess of 40 lbs. is taxed to excess beyond normal limits, immoderately 2. (ékses, iksés) *adj.* of something greater than what is usual or permitted, excess weight [fr. F. *excès*]

**excessive** (iksésiv) *adj.* going beyond the limit of what is needed, tolerable, desirable etc., to drive at excessive speed || very great, excessive kindness [F. *excessif*]

**excess-profits tax** (éksesprófit) a tax levied, esp. in wartime, on business profits in excess of the average of a specified period

**exchange** (iksčéindʒ) *pres. part. ex-changing past and past part. ex-changed v.t.* to give or receive (one thing in return for something else) || to interchange, take or receive from another (the same thing as that which one gives, or its equivalent), to exchange greetings, exchange addresses || to change over from (one thing to another), to substitute (one for another), to exchange London fog for Riviera sunshine || to change (money) from one currency to another || to change places, holidays, jobs etc. with someone [O.F. *eschangier*]

**exchange** *n.* the giving or receiving of one thing in return for something else || a reciprocal giving and receiving of things of the same kind, an exchange of letters || an interchange of visits, jobs etc. || a changeover from one thing to another, a welcome exchange of poverty for comfort || a thing given in return for something else, would this phonograph be a fair exchange for your tape recorder? || the conversion of the money of one country into that of another || the price of one country's money in the currency of another || a central place of business for merchants, brokers or financiers, a wool exchange ("STOCK EXCHANGE") || (telephone) the local center to which subscribers are connected and through which they make and receive calls || (pl. banking) checks etc. sent to a clearinghouse **ex-change-ability** *n.* the state of being exchangeable **exchange-able** *adj.* capable of being exchanged [M.E. *eschaunge* fr. A.F.]

**exchange control** control by a country of the exchange of its money against foreign money, with the ability to devalue or revalue when necessary, in the interests of stable international trade. It can limit the amounts made available for buying imports, for foreign travel or emigration, for foreign investments etc. and can claim foreign money earned, giving domestic currency in return, as a safeguard against speculative money moving between countries for quick profits. (\*FOREIGN EXCHANGE)

**exchange rate** the price of a currency when traded for the currency of another nation

**Exchange Rate Mechanism (ERM)** part of the European Monetary System which seeks to promote monetary stability in Europe. It is administered by the finance ministers and central banks of the member states

**exchange theory** a theory of social behavior that holds that the actions of individuals, particularly in formal organizations, are motivated by the expectation of having their favors returned, although the obligation so created is diffuse, rather than specific

**exchange, theory of (phys.)** the theory formulated by Pierre Prévost that all material bodies are continually absorbing, emitting and reflecting radiant energy, the energy flux depending on the temperature

**ex-chequer** (iksčéker) *n.* a state treasury || the finances of a person or group **Ex-chequer** the British government department which receives and takes care of public revenue || the office of the chancellor who has this charge || \*COURT OF EXCHEQUER [M.E. *escheker* fr. O.F. *eschiquier*, a chessboard, from the checkered cloth which in Norman times covered the table at which payments were made, and which was an abacus]

**ex-ci-mer** (éksimer) *n.* (chem.) a molecular species formed by two identical molecules excited by an energy source

**excimer laser (optics)** a laser utilizing a noble gas, e.g., helium, neon, operating during an excimer transition

**ex-ci-plex** (éksipleks) *n.* the excited state complex that takes place when molecules of a dye

are electrically stimulated, immediately before emission of light, and leading to the creation of another form of the dye

**ex-cise** 1. (éksaiz) *n.* a tax duty levied on the manufacture, sale or consumption within a country of certain commodities, or the charge for a license to manufacture or sell them (cf. CUSTOMS) 2. (iksáiz) *v.t. pres. part. ex-cising past and past part. ex-cised v.t.* to lay excise duty on [prob. fr. M. Du. *excijs*]

**ex-cise** (iksáiz) *pres. part. ex-cising past and past part. ex-cised v.t.* to cut away by surgery || to remove, strike out, the footnotes have been excised from the popular edition **ex-ci-sion** (iksíʒən) *n.* a cutting out || the thing cut out [fr. L. *excidere* (*excisus*)]

**ex-cite** (iksáit) *pres. part. ex-citing past and past part. ex-cited v.t.* to cause the emotions of (a person) to be intense || to arouse (admiration, jealousy etc.) || to stir up (the imagination etc.) || to incite (a mob) to collective action or hysteria || (biol.) to stimulate, cause to respond || (elec.) to cause to be electrically active or magnetic **ex-ci-ta-bility** *n.* **ex-ci-ta-ble** *adj.* able to be excited || emotionally unbalanced, quickly enraged or worked up **ex-ci-tant** (iksáitənt, éksi-tənt) *n.* something which excites || (med.) a stimulant **ex-ci-ta-tion** (éksáitəʃən) *n.* **ex-ci-ta-to-ry** (iksáitətəri, éksáitəturi) *adj.* (med.) stimulating **ex-ci-te-ment** *n.* an exciting or being excited || a thing or event that causes excitement **ex-ci-ting** *adj.* [F. *exciter*]

**ex-ci-ton** (éksətn) *n.* (electr.) a specially excited state of electrons in an insulator or semiconductor that permits transmission of energy without an electric charge, sometimes described as an electron and a hole in a bound state

**ex-ci-ton-ics** (éksətniks) *n.* (electr.) study of solid state physics dealing with excitons in dielectrics and semiconductors **excitonic** *adj.*

**ex-claim** (ikskléim) *v.t.* to cry out in emotion or excitement || *v.t.* to utter under the stress of sudden thought or emotion [fr. F. *exclamer*]

**ex-cla-ma-tion** (ékskləmeiʃən) *n.* the act of exclaiming || the words exclaimed || an interjection [F.]

**exclamation point, exclamation mark** the punctuation mark (!) which follows an exclamation

**ex-cla-ma-to-ry** (ikskləmetəri, ékskləmə-turi) *adj.* of or relating to exclamation || fond of using exclamations

**ex-clave** (ékskleiv) *n.* a part of a country geographically separated from the main part and surrounded by foreign territory (of which it is an enclave) [fr. EX + L. *clavis*, key]

**ex-clude** (iksklú:d) *pres. part. ex-cluding past and past part. ex-cluded v.t.* to keep out, prevent or forbid the entry of || to leave out, to exclude from blame || to make impossible, prevent, to exclude the possibility of error || to leave out of account, they exclude the possibility of murder **ex-clú-ding** *prep.* except, excepting [fr. L. *excludere*]

**ex-clu-sion** (iksklú:ʒən) *n.* an excluding or being excluded to the exclusion of in such a way as to exclude, he plays chess to the exclusion of other interests with the exclusion of except for [fr. L. *exclusio* (*exclusionis*)]

**ex-clu-sion-ary** rule (iksklú:ʒənəri:) (law) the barring of evidence unlawfully obtained

**ex-clu-sive** (iksklú:siv) 1. *adj.* sole, not shared with any others, exclusive rights || confined to a selected few (esp. the rich or snobbish), an exclusive neighborhood || fastidiously selective, exclusive in one's choice of friends || having the effect of excluding, mutually exclusive choices || (Br., of terms charged) limited to what is specified 2. *adv.* (of dates, numbers etc.) not counting the first and last mentioned, 8 to 16 exclusive exclusive of excluding, not allowing for, sales, exclusive of this month's, have reached a million [fr. M.L. *exclusivus* fr. *excludere*, to leave out]

**ex-cog-i-tate** (ékskɔdʒíteit) *pres. part. ex-cog-i-tating past and past part. ex-cog-i-tated v.t.* to think out or puzzle out **ex-cog-i-ta-tion** *n.* [fr. L. *excogitare* (*excogitatus*)]

**ex-com-mu-ni-cate** 1. (ékskəmju:nikeit) *v.t. pres. part. ex-com-mu-ni-cating past and past part. ex-com-mu-ni-cated (eccles.)* to exclude partially or totally from communion with the Church 2. (ékskəmju:nikit) *adj.* excommunicated 3. (ékskəmju:nikit) *n.* an excommunicated person **ex-com-mu-ni-cá-tion** *n.* an excommunicating or being excommunicated. Lesser excommunication excludes from the sacraments, greater excommunication from all the

benefits of the Church [fr. L. *excommunicare* (*excommunicatus*), to excommunicate]

**ex-co-ri-ate** (iksəkóri:et, éksəkóri:et) *pres. part. ex-co-ri-ating past and past part. ex-co-ri-ated v.t.* to remove the skin from by tearing, rubbing, grazing, scalding etc. || (rhet.) to criticize savagely **ex-co-ri-a-tion** *n.* [fr. L. *excoriare* (*excoria-tus*), to flay]

**ex-cro-ment** (ékskrəmənt) *n.* waste matter expelled from the bowels **ex-cro-men-tal** (ékskrəməntl) *adj.* [F. *excrément*]

**ex-cres-cence** (ikskrésns) *n.* an abnormal growth (on a plant, an animal or the human body, e.g. a wart) || a normal external growth, e.g. an elephant's trunk [fr. L. *excrecentia* fr. *ex-* out + *crecere*, to grow]

**ex-cres-cent** (ikskrésnt) *adj.* forming or like an excrescence || (gram.) epenthetic [fr. L. *excrecent* (*excrecentis*) fr. *excrecere*, to grow out]

**ex-cre-ta** (ikskrí:tə) *pl. n.* urine and feces, the nonnutritive material taken in with food and passed out of the alimentary canal || (bot.) deleterious substances formed within a plant [L.]

**ex-crete** (ikskrí:t) *pres. part. ex-creting past and past part. ex-creted v.t.* to eliminate (waste matter) from the plant or animal system **ex-cre-tive** *adj.* **ex-cre-to-ry** (ékskrətəri, ékskrəturi) 1. *adj.* of or for excretion 2. *n. pl.* **ex-cre-to-ries** an excretory organ [fr. L. *excretere* (*excretus*), to separate out]

**ex-cre-tion** (ikskrí:ʃən) *n.* the act of excreting || the matter excreted [fr. L. *excretio* (*excretionis*)]

—Some end products of animal metabolism, often nitrogenous compounds, are useless or harmful to the organism. They are excreted from the body, indigestible matter being excreted as feces and urea and other compounds as urine, or they are made harmless within it. Excretion also takes place through the skin (ex-pelling water, salts, fat) and from the lungs (carbonic acid gas). Invertebrates have various means of getting rid of waste products, e.g. the contractile vacuole in the amoeba and other protozoa, nephridia in the earthworm, Malpighian tubules in insects etc. Plants produce few waste products: these are usually excreted in gaseous form or stored as harmless solids

**ex-cru-ci-a-tion** (ékskru:ʃi:etjən) *adj.* exceedingly painful or hard to bear [pres. part. of *excruciare*]

**ex-cul-pate** (ékskalpeit, ékskalpeit) *pres. part. ex-cul-pating past and past part. ex-cul-pated v.t.* to declare free from blame **ex-cul-pa-tion** *n.* **ex-cul-pa-to-ry** (ékskalpətəri, ékskalpəturi) *adj.* [fr. EX + L. *culpa*, fault]

**ex-cu-r-rent** (ékskərənt, ékskərənt) *adj.* (zool.) ducts, channels or canals in which there is an outgoing flow, as in sponges || (bot.) having the midrib of the leaf projecting beyond the apex || (bot.) having a single, straight, undivided main stem, as in some coniferous trees [fr. L. *excurrere* (*excurrentis*) fr. *excurrere*, to run out]

**ex-cu-rsion** (ékskərsən, ékskərsən) *n.* a short pleasure trip to and from a place, esp. one with reduced rates on public transport || a wandering from the subject, a digression || the attempt of an activity other than one's usual one, an excursion into politics || (astron.) a deviation from the normal path of a heavenly body **ex-cu-rsion-ist** *n.* [fr. L. *excursio* (*excursionis*) fr. *excurrere*, to run out]

**ex-cu-rsive** (ékskərsiv) *adj.* of or characterized by digression, an excursive treatment of a subject [fr. L. *excurrere* (*excursus*), to go forth]

**ex-cu-rsus** (ékskərsəs) *pl. ex-cu-rsus-es*, *ex-cursus* *n.* a special note or appendix in a learned work dealing with a particular point on a subject [L.]

**ex-cu-sa-ble** (ékskjəzəbl) *adj.* that can be excused or pardoned || justified **ex-cu-sa-bly** *adv.*

**ex-cu-sa-to-ry** (ékskjəzətəri, ékskjəzəturi) *adj.* serving or intended to excuse, apologetic

**ex-cuse** (ékskjúz) *pres. part. ex-cusing past and past part. ex-cused v.t.* to free (oneself or someone else guilty of a fault) from blame || to give reason for not blaming, nothing can excuse his carelessness || to forgive, overlook, to excuse a fault || to release (someone) from an obligation, undertaking or duty, your ill-health will excuse you from night duties || to give exemption from, he is excused night duty || to permit (someone) to leave a classroom etc. [M.E. *excusen*, *excuse* O.F.]

**ex-cuse** (ékskjús) *n.* the act of excusing || a thing which serves to excuse || a pretence, backache is only an excuse for not gardening (pl.) apologies [O.F. *excuse*]

**denounce** (dináuns) *pres. part. denouncing past and past part. denounced v.t.* to inform against || to censure, esp. publicly, inveigh against || to announce formally the end of (a treaty, agreement etc.) **denouncement** *n.* [O.F. *denoncier*]

**denounce** *n.* mediating term in the U.S. Senate between "censure," which is the strongest condemnation of a member, and "condemnation," a less harsh term used for censuring members for improper conduct

**dense** (dens) *comp. denser superl. densest adj.* massed closely together || thick, dense fog || (of the expression of thought, images) rich in texture, requiring mental effort to appreciate || stupid, slow-witted || (*phys.*) of a medium which has a relatively large retarding effect on radiation and hence a high refractive power || (*photog.*) tending to be opaque [fr. L. *densus*]

**densimeter** (densimíter) *n.* any instrument for measuring density or specific gravity

**densitometer** (densitómíter) *n.* a densimeter || an instrument for measuring optical density, esp. that of a photographic image

**density** (densiti:) *pl. densities n.* the quality of being dense || (*phys.*) mass per unit volume || (of a static charge) the quantity of electricity per unit area or unit volume || (*optics*) the degree of opacity of a translucent substance, or of darkening of a photographic image || the amount of anything per unit of volume or area, **population density** || (*pop.*) stupidity [F. *densité*]

**dent** (dent) *n.* a slight hollow made in a surface by pressure or a blow 2. *v.t.* to make a dent in || *v.i.* to become dented [var. of DINT]

**dent** *n.* a toothlike notch, e.g. in a lock or gear-wheel [F.]

**dental** (dént'l) 1. *adj.* of or relating to the teeth or dentistry || (*phon.*) formed with the tip of the tongue against the teeth or the alveolar ridge, e.g. 't' and 'd' 2. *n.* a dental consonant [fr. Mod. L. *dentalis* fr. *dens* (*dentis*), tooth]

**dental floss** waxed thread used for cleaning between the teeth

**dentalize** (dént'laiz) *pres. part. dentalizing past and past part. dentalized v.t. (phon.)* to make (a speech sound) dental

**dentate** (dén'teit) *adj. (biol.)* toothed || having a sharp, sawlike edge **dentation** (déntatíon) *n.* [fr. L. *dentatus* fr. *dens* (*dentis*), tooth]

**Dentcare** Canadian government program of free dental care for children

**denticle** (déntik'l) *n.* a small tooth or tooth-shaped projection || the scales of certain elasmobranch fish **denticular** (déntikjuler), **denticulate**, **denticulated** *adjs.* **denticulation** *n.* [fr. L. *denticulus*, little tooth]

**dentifrice** (déntifris) *n.* a paste or powder for cleaning the teeth [F.]

**dentil** (dént'l) *n.* one of a row of small rectangular blocks used as an ornamental design, esp. under a cornice in classical architecture [obs. F. *dentille*]

**dentin** (déntin) *n.* dentine

**dentine** (déntin) *n.* a hard, elastic substance, chemically resembling bone, composing the main part of teeth [fr. L. *dens* (*dentis*), tooth]

**dentist** (déntist) *n.* someone professionally qualified to treat ailments of the teeth **dentistry** (déntistri:) *n.* the science of the care of the teeth || the work of a dentist [fr. F. *dentiste*]

**dentition** (déntíon) *n.* the development of teeth, teething || the number and kind of teeth and the way they are arranged in an animal [fr. L. *dentitio* (*dentitionis*)]

**denture** (déntjər) *n.* a set of artificial teeth [F.]

**denturist** (déntjərist) *n.* dental technician who provides dentures for patients without benefit of a dentist's professional services

**denunciation** (dinánsi:éifən) *n.* the act of denouncing || an instance of censuring, esp. publicly [fr. L. *denunciatio* (*denunciatio*)]

**denunciator** (dinánsi:éitər) *n.* someone who denounces **denunciatory** (dinánsi:etjri:, dinánsi:etjuri:) *adj.* [F. *dénonciateur* fr. L.]

**Denver** (dénvər) the capital (pop. 467,610, with agglom. 1,768,000) of Colorado, center of an agricultural and mining region (gold, silver, coal). Industries: canning, meat packing, mining machinery. City has regional federal offices, branch of U.S. mint, and military installations

**deny** (dinái) *pres. part. denying past and past part. denied v.t.* to declare to be untrue, to deny a charge || to repudiate, Peter denied Christ || to refuse (someone something or something to someone) to deny oneself to practice self-denial [F. *dénier*]

**deodand** (di:ədənd) *n.* (*Eng. hist.*) something confiscated by the crown, because it had been the immediate cause of a man's death. The proceeds were used for alms [A.F. *deodande*]

**deodar** (di:ədər) *n.* *Cedrus deodara*, fam. *Coniferae*, a very large Himalayan cedar yielding valuable wood and noted for its beauty [Hindi *dēodār* fr. Skr. *deva-dāra*, divine tree]

**deodorant** (di:ədərənt) *n.* an agent for neutralizing unpleasant odors, esp. of perspiration [fr. DE+L. *odorans* (*odorantis*) fr. *odorare*, to smell]

**deodorization** (di:ədərizéifən) *n.* a deodorizing

**deodorize** (di:ədərəiz) *pres. part. deodorizing past and past part. deodorized v.t.* to neutralize a bad odor in (a room, clothes etc.) [fr. DE+L. *odor*, smell]

**deontological** (di:ɒntəlɒdʒik'l) *adj.* of or relating to deontology

**deontologist** (di:ɒntəlɒdʒist) *n.* a philosopher concerned with deontology

**deontology** (di:ɒntəlɒdʒi:) *n.* the science of duty or moral obligation [fr. Gk *deon* (*deontos*), obligation+*logos*, discourse]

**deorbit** (di:ɔrbit) *v.* to remove from or depart from orbiting—**deorbit** *n.* the process

**deoxygenate** (di:ɒksaɪdʒəneɪt) *pres. part. deoxygenating past and past part. deoxygenated v.t.* to remove oxygen, esp. free oxygen, from

**deoxyribonucleic acid** (di:ɒksaɪrɪbɒnu:kli:fik) *n.* (abbr. DNA) the nucleic acid found in the nuclei of all cells. It is considered as a gene. The chemical structure of DNA is characterized by sequences of four nitrogen bases (adenine, thymine, guanine and cytosine) occurring in one of two nucleic acid chains and in a complementary fashion in the other. The sequence of bases in a gene constitutes a code that determines the nature of the quality conferred on the organism inheriting that gene. It is believed that the sequence of bases determines the sequence of amino-acid residues in a protein synthesized in the cell under the influence of the gene. The process is thought to occur in two steps: the gene serves as a template for the production of some thousands of molecules of ribonucleic acid. This ribonucleic acid then, with the genic master code transmitted to it, combines the molecules of the various amino acids (there are twenty in all) in the proper sequence, each ribonucleic-acid molecule producing some ten thousand protein molecules. In addition to controlling the manufacture of other molecules, DNA can serve as a template for its own reduplication during mitosis

**deoxyribonucleotide** (di:ɒksaɪrɪbɒnu:kli:fətaɪd) *n.* a nucleotide constituent of DNA containing deoxyribose, a structural sugar derivative

**depart** (dipárt) *v.i.* to go away || to set off or out || to deviate, to depart from routine [O.F. *departi*]

**departed** (dipártid) 1. *adj.* bygone 2. *n.* the departed the dead person or persons

**department** (dipártmēt) *n.* a distinct branch of a whole, e.g. of a complex business organization, a big store, or municipal, state, college or university administration || an administrative district in France of the largest category de-

**part-mental** (dipártmēt'l, di:partmēt'l) *adj.* **departmentalize** *pres. part. departmentalizing past and past part. departmentalized v.t.* [M.E. fr. O.F.]

**department store** a large store with many departments, organized for selling many different kinds of goods

**departure** (dipártjər) *n.* a going away || a deviation || a fresh course of action. || (*naut.*) the amount by which a ship has changed its longitude in sailing to take one's departure to say goodbye and go [O.F. *departüre*]

**depend** (dipénd) *v.i.* (with 'on' or 'upon' in all senses) to rely for livelihood, support etc., he depends on his pen for a living || to rely trustfully, count, don't depend on his cooperation || to be contingent, the plan depends on the weather [O.F. *dependre*]

**dependability** (dipéndəbiliti:) *n.* the quality of being dependable

**dependable** (dipéndəb'l) *adj.* reliable, trustworthy **dependably** *adv.*

**dependance** \*DEPENDENCE

**dependant, dependant** (dipéndənt) *n.* someone who relies upon another for financial support [F. *dépendant*]

**dependence, dependance** (dipéndəns) *n.* a depending on another for material or emotional support || trust, reliance || the state of being contingent [F. *dependance*]

**dependency** (dipéndənsi:) *pl. dependencies* *n.* the state of being dependent || something depending on or subordinate to another, esp. a country controlled by another

**dependent** (dipéndənt) 1. *adj.* (of a person) being a financial charge || (of lands or peoples) subject || (*gram.*, of a clause) subordinate || forced to rely, dependent on a friend for a lift to town || (*bot.*) hanging down, dependent branches || contingent 2. *n.* \*DEPENDANT [F. *dépendant*, spelling altered after L. *dependens* (*dependentis*)]

**dependent clause**

**dephosphorize** (di:fəsfəraiz) *pres. part. dephosphorizing past and past part. dephosphorized v.t.* to remove the phosphorus from (ore etc.)

**depict** (dipíkt) *v.t.* to represent by drawing or painting || to describe verbally **depiction** *n.* [fr. L. *depingere* (*depictus*), to paint]

**deplete** (diplet) *pres. part. depleting past and past part. depleted v.t.* to reduce or empty by destroying or using up, depleted capital **depletion** *n.* [fr. L. *deplere* (*depletus*), to empty out]

**deplorable** (dip'lərab'l, dip'lərab'l) *adj.* much to be regretted || wretched, deplorable living conditions **deplorably** *adv.*

**deplore** (dip'lɔr, dip'lɔr) *pres. part. deploring past and past part. deplored v.t.* to regret very much or express conventional regret for, to deplore someone's absence || to be grieved and appalled by, to deplore the torturing of prisoners [fr. L. *deplorare*, to bewail]

**deploy** (dip'lɔi) *v.t.* to spread out (troops) || to cause (ships, tanks etc.) to move into battle formation || *v.i.* (of troops) to spread out || (of a fighting force) to take up battle formation **deployment** *n.* [F. *déploier*]

**deplume** (dip'lum) *pres. part. depluming past and past part. deplumed v.t.* to pluck the feathers from || (*rhet.*) to strip honors, possessions etc. from [fr. F. *déplumer*]

**depoliarize** (di:pəliəraiz) *pres. part. depolarizing past and past part. depolarized v.t.* to deprive of polarity || to prevent polarization of (e.g. an electrode)

**depoliticization** (di:pəlitizéifən) *n.* removal from partisan politics —**depoliticize** *v.* —**depoliticized** *adj.* Cf **POLITICIZATION**

**depolute** (dip'pəlu:t) *v.* to remove pollution —**depollution** *n.*

**deponent** (dip'əunənt) 1. *adj.* (*gram.*, of verbs in certain languages) passive or middle voice in form but active in meaning 2. *n.* a deponent verb || someone who gives evidence, esp. in writing, for use in court [fr. L. *deponens* (*deponentis*) fr. *deponere*, to put down, testify]

**depopulate** (di:pəpjuleɪt) *pres. part. depopulating past and past part. depopulated v.t.*

CONCISE PRONUNCIATION KEY: (a) æ, cat; o, car; ɔ fawn; e, snake. (e) e, hen; i, sheep; iə, deer; ə, bear. (i) i, fish; ai, tiger; ɔ, bird. (o) o, ox; au, cow; ou, goat; u, poor; ɔi, royal. (u) u, duck; u, bull; u, goose; ə, bacillus; ju, cube. x, lock; θ, think; ʒ, bother; z, Zen; 3, corsage; dʒ, savage; ŋ, orangutang; j, yak; ʃ, fish; tʃ, fetch; ɹ, rabble; n, reden. Complete pronunciation key appears inside front cover.